



Coalescence of electromagnetic travelling waves in a saturated ferrite

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Résumé en anglais	<p>We investigate how dissipation and nonlinearity affect an electromagnetic perturbation propagating into a saturated ferromagnet in the presence of an external magnetic field. We study the problem in (1+1) and (2+1) dimensions. It is found that at lowest order of the perturbation theory, the Burgers' equation in (1+1) dimensions governs such dynamics. In (2+1) dimensions we show that the phenomena obeys a nonlinear evolution equation (non-integrable) of Burgers type. We give exact solutions which describe in (1+1) dimensions the propagation of a travelling electromagnetic wave and the coalescence of N travelling fronts and in (2+1) dimensions the propagation of a nearly one-dimensional travelling front. We establish, in terms of the physical parameters of the system, whether breaking or diffusion of the initial perturbation dominates.</p>
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Liens

[1] <http://okina.univ-angers.fr/herve.leblond/publications>

[2] [http://okina.univ-angers.fr/publications?f\[author\]=21026](http://okina.univ-angers.fr/publications?f[author]=21026)

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